UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/451,619	11/30/1999	SEIICHI MORI	005702-20050	9292

26021 7590 05/06/2002

HOGAN & HARTSON L.L.P.
500 S. GRAND AVENUE
SUITE 1900
LOS ANGELES, CA 90071-2611

EXAMINER	
WEISS, HOWARD	

ART UNIT	PAPER NUMBER
2814	

DATE MAILED: 05/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/451,619	Applicant(s) MORI, SEIICHI	
	Examiner Howard Weiss	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 March 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *21 March 2002* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *8* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Attorney's Docket Number: 005702-20050
Filing Date: 11/30/99
Continuing Data: none
Claimed Foreign Priority Date: 11/30/98 (JPX)
Applicant(s): Mori

Examiner: Howard Weiss

Drawings

1. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 3/21/02 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102/103

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Initially, and with respect to Claims 1, 2 and 6, note that a "product by process" claim is directed to the product per se, no matter how actually made. See *In re Thorpe et al., 227 USPQ 964 (CAFC, 1985)* and the related case law cited therein which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or

obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. As stated in Thorpe,

> even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. *In re Brown, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972); In re Pilkington, 411 F.2d 1345, 1348, 162 USPQ 145, 147 (CCPA 1969); Buono v. Yankee Maid Dress Corp., 77 F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir. 1935).*

Note that Applicant has burden of proof in such cases as the above case law makes clear.

5. Claims 1 to 3 are rejected under 35 U.S.C. § 102(e) as being anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over Lu et al.

   Lu et al. show all aspects of the instant invention (e.g. Figure 1 and Column 5 Lines 15 to 41) including:

   - a semiconductor substrate **104**
   - a source region **120** and a drain region **118a**
   - a floating gate **100, 108** provided on an insulating layer **102**
   - the overlap **124a** of said drain region with the floating gate is larger than the overlap **124b** of said source region
   - the erasing and writing procedures are as claimed (Column 4 Line 27 to Column 5 Line 13) including using hot electron injection (Column 5 Lines 5 to 7)

   As to the grounds of rejection under section 103(a), how the source region is made (by self-alignment with a side wall or by another means) and what impurity dose quantity was use are intermediate process steps and does not affect the final device structure as claimed. See MPEP § 2113 which discusses the handling of "product by process" claims and recommends the alternative (§ 102/103) grounds of rejection.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lu et al. in view of Okuda et al.

Lu et al. show most aspects of the instant invention (Paragraph 5) except for the electric charge accumulating portion being an insulating layer having trap level therein. Okuda et al. teach (e.g. Figures 1(a,b)) to use trap layers **11, 12, 14,15** to provide a low-voltage and high date performance device (Column 2 Lines 52 to 61). It would have been obvious to a person of ordinary skill in the art at the time of invention to use trap layers as taught by Okuda et al. in the device of Lu et al. to provide a low-voltage and high date performance device.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lu et al. in view of Kume et al.

Lu et al. show most aspects of the instant invention (Paragraph 5) except for source junction depth being larger than the drain junction depth. Kume et al. teach (e.g. Figure 1) to have the source junction depth larger than the drain junction depth to make it possible to apply a high erase voltage (Page 560 Column 2 second paragraph). It would have been obvious to a person of ordinary skill in the art at the time of invention to have the source junction depth larger than the drain junction depth as taught by Kume et al. in the device of Lu et al. to make it possible to apply a high erase voltage.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lu et al. in view of Sung et al.

Lu et al. show most aspects of the instant invention (Paragraph 5) except for the a side wall on said control gate made of two layers. Sung et al. teach (e.g. Figures 1A and 3A) to have the side wall on the control gate **14** to have two layers **28, 29'** to reduce the number of source pickups (Column 1 Lines 28 to 30). It would have been obvious to a person of ordinary skill in the art at the time of invention to have the

side wall on the control gate to have two layers as taught by Sung et al. in the device of Lu et al. to reduce the number of source pickups.

Response to Arguments

9. The Applicant's arguments filed 3/21/02 have been fully considered but they are not persuasive. In reference to the claim language referring to hot electrons generated in the vicinity of the drain region and implanted into the electric charge accumulating portion, intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. *In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963).* In the instant case, Lu et al. state that their invention may be written (i.e. programmed) and erased by any number of methods including hot electron injection (Column 5 Line 5 to 7). The details of the method is left to one of ordinary skill in the art and does not affect the structure of Lu et al.'s invention.

In reference to the overlap of the drain region with the electric charge accumulating portion being set larger the overlap of the source, Lu et al. state (Column 5 Lines 32 to 41) the drain overlap **124a** is larger than the source overlap **124b**. In view of these reasons and those set forth in the present office action, the rejections of the stated claims stand.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. Papers should be faxed to Art Unit 2814 via the Art Unit 2814 Fax Center located in Crystal Plaza 4, room 3C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2814 Fax Center number is **(703) 308-7722** or **-7724**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications. The official TC2800 Before-Final, **(703) 872-9318,** and After-Final, **(703) 872-9319**, Fax numbers will provide the fax sender with an auto-reply fax verifying receipt of their fax by the USPTO.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard Weiss at **(703) 308-4840** and between the hours of 8:00 AM to 4:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via **Howard.Weiss@uspto.gov**.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group 2800 Receptionist at **(703) 308-0956**.

13. The following list is the Examiner's field of search for the present Office Action:

Field of Search	Date
U.S. Class / Subclass(es): 257/ 315, 324; 438/288	thru 5/3/02
Other Documentation: none	
Electronic Database(s): EAST (USPAT)	thru 5/3/02

HW/hw
3 May 20023

Howard Weiss
Patent Examiner
Art Unit 2814